EPA/AMD/R03-88/045
1988

EPA Superfund
Record of Decision Amendment:

TYSONS DUMP
EPA ID: PAD980692024
OU 01
UPPER MERION TWP, PA
03/31/1988

MATED TO BE 27,300 YARD3, BASED ON EPA'S LATEST STUDIES AT THE SITE. AN ESTIMATED 6040 YARD, OF CEMENTITIOUS MATERIAL WOULD BE ADDED TO THE SOILS TO REMOVE FREE WATER PRIOR TO TRANSPORT OFF-SITE. SWELLING OF SOILS RESULTING FROM EXCAVATION WAS ESTIMATED TO CONTRIBUTE 4095 YARD3 OF ADDITIONAL VOLUME TO THE MATERIALS REMOVED FROM THE SITE, FOR A TOTAL OF APPROXIMATELY 37,000 YARD3.

AN ESTIMATED 20,200 YARD3 OF EXCAVATED SOILS WITHOUT SIGNIFICANT ORGANICS CONTENT WOULD BE STOCKPILED TO PROVIDE BACKFILL MATERIAL AND TO STABILIZE SLOPES WITHIN THE EXCAVATION AREA.

THE EPA ROD STIPULATED THAT SOILS EXCAVATED FROM THIS AREA MUST BE DISPOSED IN FULL ACCORDANCE WITH RCRA REGULATIONS, INCLUDING THE REQUIREMENT THAT THEY BE SENT TO A SUBTITLE C LANDFILL FOR DISPOSAL. A SUBTITLE C LANDFILL IS ONE WITH A DOUBLE LINER AND A DOUBLE LEACHATE COLLECTION SYSTEM.

A. EFFECTIVENESS

1. PROTECTIVENESS

REMOVAL OF CONTAMINATED MATERIALS IS A HIGHLY EFFECTIVE, PERMANENT (USEFUL LIFE) SOLUTION TO PREVENTION OF 1) HAZARDOUS SUBSTANCES' MIGRATION OFF-SITE AND INTO GROUND WATER, AND 2) DIRECT CONTACT EXPOSURE WITH CONTAMINATED SOILS. IT IS HIGHLY RELIABLE AND HAS BEEN SUCCESSFULLY DEMONSTRATED AT PREVIOUS SITES AND REQUIRES LITTLE OR NO OPERATION AND MAINTENANCE.

AIR EMISSION CONTROLS AND SURFACE WATER RUN-OFF CONTROLS WOULD HAVE TO BE IMPLEMENTED DURING THE DESIGN PHASE TO MINIMIZE ANY ORGANIC VAPOR RELEASES. HOWEVER, A TEMPORARY EVACUATION PLAN FOR LOCAL RESIDENTS IN THE EVENT OF A RELEASE AND OTHER SAFETY MEASURES COULD ADEQUATELY ADDRESS THESE CONCERNS.

THE CONTINUED OPERATION OF THE LEACHATE (SEEP/SPRING) COLLECTION SYSTEM WOULD PROVIDE LONG TERM MANAGEMENT AND CONTROL OF CONTAMINANT FLOW FROM ANY SHALLOW AQUIFER SYSTEM.

2. COMPLIANCE WITH ARARS

THIS ALTERNATIVE WOULD HAVE TO SATISFY THE ARARS IN ACCORDANCE WITH RCRA CLOSURE AND POST-CLOSURE REQUIREMENTS CONTAINED IN (40 CFR 264). OTHER ARARS THAT MAY APPLY TO THE REMEDIATION OF THE SOILS THE FORMER LAGOON AREA VIA EXCAVATION AND DISPOSAL ARE THE NATIONAL AMBIENT AIR QUALITY GUIDELINES.

3. REDUCTION IN MOBILITY, TOXICITY OR VOLUME

EXCAVATION AND OFF-SITE DISPOSAL OF CONTAMINATED SOILS, FILL MATERIAL, AND WASTES TO A PERMITTED RCRA LANDFILL WOULD ELIMINATE THE CONTINUED GENERATION AND OFF-SITE MIGRATION OF LEACHATE FROM THE FORMER LAGOON LOCATIONS AND THE CONTINUED CONTAMINATION OF THE GROUND WATER ZONES. DURING EXCAVATION OF THE SOILS, MOBILITY OF SOIL CONTAMINANTS MAY BE INCREASED FROM VOLATILIZATION. VOLATILIZATION CONTROLS WOULD HAVE TO BE IMPLEMENTED DURING EXCAVATION TO CONTROL THIS POTENTIAL PROBLEM. THE RESULT OF EXCAVATION AND OFF-SITE DISPOSAL WOULD BE THE TRANSFERRAL OF THE CONTAMINANT MASS TO ANOTHER LAND DISPOSAL FACILITY WITHOUT FURTHER REDUCTION IN TOXICITY AND MOBILITY.

4. RELIABILITY

EXCAVATION AND OFF-SITE DISPOSAL IS HIGHLY RELIABLE IN REMOVING CONTAMINATED SOILS. MINIMAL OPERATIONS AND MAINTENANCE REQUIREMENTS WOULD BE ENVISIONED FOLLOWING COMPLETION OF SOIL REMOVAL, ASSUMING PROVISIONS FOR CONTROLLING SITE SOIL EROSION AND RUN-OFF WERE MADE. AS WITH SOME SOIL EXCAVATIONS DOWN THE BEDROCK, UNLESS PRECAUTIONARY MEASURES ARE IMPLEMENTED, THE POTENTIAL MAY EXIST FOR RECONTAMINATION OF THE BACKFILLED SOILS FROM ORGANIC VAPORS DIFFUSING UPWARD FROM THE CONTAMINATED BEDROCK.

LEACHATE (SEEP/SPRING) COLLECTION AND TREATMENT HAS PROVEN TO BE EFFECTIVE IN REDUCING CONTAMINANTS IN WATER.

B. IMPLEMENTABILITY

1. TECHNICAL FEASIBILITY

SHORT-TERM

EXCAVATION OF SOILS WOULD BE A TECHNICALLY FEASIBLE ALTERNATIVE, EVEN THOUGH THE SITE HAS LIMITED AREA FOR MANEUVERING EQUIPMENT. CONVENTIONAL EARTH MOVING EQUIPMENT WOULD BE ABLE TO OPERATE ON THE SITE AND NEAR THE

QUARRY HIGH WALL PROVIDED THAT APPROPRIATE SAFETY MEASURES WERE TAKEN. SUCH SAFETY PRECAUTIONS WOULD INCLUDE IMPROVEMENT OF THE SITE ACCESS ROAD, INSPECTION OF SLOPE STABILITIES, AND THE CONSTRUCTION OF STABLE SLOPES WHERE NEEDED.

THIS ALTERNATIVE WOULD REQUIRE THE AVAILABILITY OF SUFFICIENT DAILY SUBTITLE C LANDFILL CAPACITY TO ALLOW DISPOSAL TO KEEP PACE WITH EXCAVATION. AN APPROPRIATE SUBTITLE C LANDFILL IS ONE THE EPA HAS AUTHORIZED TO ACCEPT WASTES FROM SUPERFUND SITES AND WHICH HAS A DOUBLE LINER AND DOUBLE LEACHATE COLLECTION SYSTEM, AS REQUIRED BY THE ROD. THE DAILY CAPACITY OF THE RECEIVING FACILITY MUST BE IDENTIFIED SINCE THE TEMPORARY STOCKPILING OF EXCAVATED SOILS WAITING FOR AVAILABLE LANDFILL CAPACITY COULD POTENTIALLY POSE UNACCEPTABLE RISKS TO THE COMMUNITY AND ENVIRONMENT.

LONG-TERM

THE EXCAVATION ALTERNATIVE WOULD NOT LIMIT ANY FUTURE REMEDIAL ACTION SHOULD THE EXCAVATION ALTERNATIVE FAIL, SUCH AS RE-EXCAVATION, ON-SITE TREATMENT, IN-SITU TREATMENT, OR ANY GROUND WATER REMEDIATION. ALSO, THIS ALTERNATIVE WOULD NOT PREVENT ANY NECESSARY ON-SITE OR OFF-SITE GROUND WATER AND SOIL MONITORING. LONG-TERM MAINTENANCE, CONSISTING PRIMARILY OF SOIL MONITORING FOR RECONTAMINATION, COULD BE PERFORMED.

OFFSITE INCINERATION ALTERNATIVE

OFFSITE INCINERATION OF THE EXCAVATED MATERIALS WAS INVESTIGATED IN FORMULATION OF THE 1984 ROD, BUT DUE TO THE LIMITED AVAILABILITY OF COMMERCIAL FACILITIES, THE TIME REQUIRED TO PROCESS THE MATERIALS (MINIMUM THREE YEARS - NO STAGING OF WASTES AT INCINERATOR) AND THE LOWEST COST OBTAINED ($21 MILLION, JUST FOR INCINERATION), IT WAS DECIDED THAT THE LANDFILL ALTERNATIVE WAS MORE FEASIBLE AND COST EFFECTIVE.

A RECENT COST ESTIMATE DEVELOPED IN REGION III'S BRUIN LAGOON ROD (SEPTEMBER 26, 1986) CALCULATED, USING 1986 DOLLARS, THAT OFFSITE INCINERATION FOR APPROXIMATELY 17,000 CUBIC YARDS OF CONTAMINATED MATERIAL WOULD COST IN THE RANGE OF $100 TO $202 MILLION. BECAUSE OF THESE HIGH PROJECT COSTS AND THE ESTIMATED LONG TIMEFRAME FOR IMPLEMENTATION, THIS ALTERNATIVE WAS NOT SELECTED FOR FURTHER EVALUATION.

INNOVATIVE TECHNOLOGY REMEDIAL ACTION ALTERNATIVE

ALTERNATIVE 6 - VACUUM EXTRACTION OF CONTAMINATED SOILS

THE VACUUM EXTRACTION PROCESS IS AN IN-SITU TREATMENT PROCESS USED TO CLEAN SOILS THAT CONTAIN VOLATILE COMPOUNDS. THE PROCESS UTILIZES EXTRACTION WELLS TO INDUCE A VACUUM ON SUBSOILS THAT ARE ABOVE THE WATER TABLE. SUBSURFACE VACUUM PROPOGATES LATERALLY, CAUSING IN-SITU VOLATILIZATION OF COMPOUNDS ADSORBED TO SOILS. VOLATILIZED COMPOUNDS AND SUBSURFACE AIR MIGRATE RAPIDLY TO EXTRACTION POINTS AND ARE THEN PASSED THROUGH AND COLLECTED ON ACTIVATED CARBON SUBSTRATE. FIGURE 2 SHOWS A CONCEPTUAL DESIGN FOR THE VACUUM EXTRACTION PROCESS.

A. EFFECTIVENESS

1. PROTECTIVENESS

THIS ALTERNATIVE IS DESIGNED TO REDUCE THE LEVEL OF CONTAMINANTS IN THE FORMER LAGOON AREAS AND TO REDUCE THE POTENTIAL RISKS TO PUBLIC HEALTH, SITE WORKERS AND THE ENVIRONMENT. THE ALTERNATIVE WOULD COMBINE THE LEACHATE (SEEP/SPRING) WATER COLLECTION AND TREATMENT SYSTEM, VACUUM EXTRACTION FOR SOIL REMEDIATION, AND REMEDIATION OF THE RESIDUAL, DENSE, NON-AQUEOUS, PHASE LIQUID (DNAPL) IN THE UNSATURATED BEDROCK BENEATH THE FORMER LAGOON AREA REMEDIATION OF THE SOILS AND UNSATURATED BEDROCK ELIMINATES THE NEED FOR A SOIL CAP MEETING RCRA PERFORMANCE STANDARDS. CONTROL OF SURFACE INFILTRATION OR DNAPL VAPOR MOVEMENT BY A CLAY/BENTONITE AND/OR IMPERMEABLE LAYER WOULD NOT BE REQUIRED. THE SOIL COVER WOULD BE INSTALLED AT THE CONCLUSION OF VACUUM EXTRACTION.

THE VACUUM SYSTEM WOULD EXTRACT ANY PERCHED GROUND WATER AND VOLATILE COMPOUNDS FROM THE SOIL COLUMN AND RESIDUAL DNAPL FROM THE UNSATURATED ZONE BENEATH THE FORMER LAGOONS. THE VACUUM-EXTRACTED WATER WOULD BE TREATED BY THE ON-SITE LEACHATE (SEEP/SPRING) WATER TREATMENT SYSTEM.

2. COMPLIANCE WITH ARARS

THE EPA FEASIBILITY STUDY AND SUBSEQUENT RECORD OF DECISION DETERMINED THAT BECAUSE IT WAS TECHNICALLY INFEASIBLE TO CAP THE SITE DUE TO THE HIGH QUARRY WALL AND THE GROUND WATER WAS NOT MONITORABLE, IN ACCORDANCE WITH THE PERFORMANCE STANDARDS FOR RCRA LANDFILL CLOSURE, AS ESTABLISHED IN (40 CFR PART 264),

CONTAMINATED SOILS EXCEEDING BACKGROUND LEVELS NEEDED TO BE REMEDIATED DOWN TO BACKGROUND LEVELS OR EXCAVATED AND DISPOSED OFF-SITE. IN MARCH 19, 1987, EPA PROPOSED AN AMENDMENT TO THIS CLOSURE REQUIREMENT (52 FED. REG. P.8712 ET.SEQ.) WHICH WOULD ALLOW CONTAMINANTS TO REMAIN ON-SITE IF IT CAN BE SHOWN THAT ANY WASTES AND WASTE RESIDUES REMAINING ON SITE WILL NOT POSE A THREAT TO HUMAN HEALTH AND THE ENVIRONMENT THROUGH ANY POTENTIAL EXPOSURE PATHWAY. THESE POTENTIA PATHWAYS 'INCLUDE EXPOSURE TO THE WASTE CONSTITUENTS THROUGH DIRECT CONTACT, GROUND WATER, SURFACE WATER, AND ATMOSPHERIC ROUTES. THIS PROPOSED RULE MAKING WOULD SERVE AS THE RCRA. ARAR WHICH VACUUM EXTRACTION WOULD HAVE TO MEET. UNDER THIS PROPOSED RULE, SAFE SOIL CRITERIA WOULD NEED TO BE DEVELOPED FOR VACUUM EXTRACTION TO ATTAIN, FOR THIS ALTERNATIVE TO BE IN COMPLIANCE AND ACCEPTABLE TO EPA.

OTHER POSSIBLE ARARS THAT MAY APPLY TO A VACUUM EXTRACTION OPERATION AND THE WATER TREATMENT WOULD BE THE AMBIENT AIR QUALITY GUIDELINES ESTABLISHED UNDER THE PENNSYLVANIA INTERIM OPERATING GUIDANCE FOR AIR TOXICS SUBSTANCES. BOTH OPERATIONS WOULD SATISFY THESE POSSIBLE ARARS. INTERIM STATUS RCRA STANDARDS OF CLOSURE, POST CLOSURE CARE, AND MONITORING MAY ALSO APPLY TO THE ALTERNATIVE.

3. REDUCTION IN MOBILITY, TOXICITY AND VOLUME

VACUUM EXTRACTION IS EXPECTED TO SIGNIFICANTLY REDUCE THE VOLUME OF CONTAMINANTS IN THE SOIL. HOWEVER, SINCE THIS TECHNOLOGY HAS NOT BEEN READILY APPLIED TO OTHER SIMILAR SITES IT CAN ONLY BE ESTIMATED THROUGH PILOT SCALE TESTS AND MODELING THAT THIS TECHNOLOGY WILL ATTAIN THE LEVELS DETERMINED BY THE AGENCY TO BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

3. RELIABILITY

RECENT STUDIES HAVE SHOWN THAT VACUUM EXTRACTION HAS A RECORD OF SUCCESS IN ACHIEVING VERY SIGNIFICANT VOC RECOVERIES FROM SOILS, AND SOME DOCUMENTATION INDICATE THAT VACUUM EXTRACTION CAN REMOVE VOCS FROM 90 PERCENT TO 99 PERCENT (USATHAMA 1985; MALOT AND WOOD 1985; MALOT 1984; PAYNE ET AL. 1986; AGRELOT ET AL. 1984; AND WESTON 1986).

THE RESULTS OF THE VACUUM EXTRACTION PILOT TEST AT THE TYSON SITE IN MAY 1987 INDICATED THAT SIGNIFICANT REDUCTIONS IN THE MOBILITY AND VOLUME OF VOCS IN THE CONTAMINATED SOILS AND UNSATURATED BEDROCK ARE ACHIEVABLE. ADDITIONALLY, IT WAS FOUND THAT VACUUM EXTRACTION ALSO REMOVED SIGNIFICANT AMOUNTS OF SEMI-VOLATILE COMPOUNDS INCLUDING ONE OF THE PREDOMINANT SITE SPECIFIC COMPOUNDS 1,2,3-TRICHLOROPROPANE.

FOUR VACUUM EXTRACTION WELLS INSTALLED TO THE TOP OF BEDROCK ACHIEVED RECOVERY RATES OF APPROXIMATELY 80 LOS/DAY OF TOTAL VOCS AND A RADIUS OF INFLUENCE OF 40 FEET; A SINGLE VACUUM EXTRACTION WELL INSTALLED IN UNSATURATED BEDROCK RECOVERED 16 LBS/DAY OF TOTAL VOCS AND EXHIBITED A SIGNIFICANT RADIUS OF INFLUENCE. PERMANENT REDUCTION IN TOXICITY WOULD OCCUR DURING FUME INCINERATION OF THE OFF-GASES FROM THE VACUUM EXTRACTION SYSTEM.

B. IMPLEMENTABILITY

1. TECHNICAL FEASIBILITY

TO DATE, NUMEROUS PILOT AND FULL-SCALE VACUUM EXTRACTION SYSTEMS HAVE BEEN CONSTRUCTED AT SITES CONSISTING OF A VARIETY OF SOIL TYPES RANGING FROM FINE, SANDY SOILS TO SANDY LOAM SOIL TO CLAYEY SILT AND SILTY CLAY SOILS. THE DEPTH TO GROUND WATER IN THESE PROJECTS VARIED. AT ONE SITE, VACUUM EXTRACTION WAS SUCCESSFULLY OPERATED IN FRACTURED LIMESTONE

THE INSTALLATION AND OPERATION OF A VACUUM EXTRACTION SYSTEM WOULD NOT LIMIT ADDITIONAL REMEDIATION AT THE TYSON'S SITE. THE VACUUM MANIFOLD, VACUUM BLOWERS, AND FUME INCINERATION EQUIPMENT OR CARBON TANKS COULD BE REMOVED RELATIVELY EASILY TO ALLOW FOR IMPLEMENTATION OF ANOTHER ON-SITE OR IN-SITU TREATMENT, IF REQUIRED.

THE ACTUAL VACUUM EXTRACTION APPARATUS WOULD REQUIRE VERY LITTLE MAINTENANCE. SUFFICIENT SOIL TESTING WOULD BE REQUIRED TO VERIFY THE ACHIEVEMENT OF ACCEPTABLE RESIDUAL CONTAMINANT LEVELS IN THE SOIL. GROUND WATER MONITORING WOULD BE REQUIRED AFTER COMPLETION OF THE VACUUM EXTRACTION.

THE TIME REQUIRED FOR FULL-SCALE VACUUMING TO ACHIEVE THE DESIRED SOIL REMEDIATION FOR PROJECTS DOCUMENTED IN THE LITERATURE RANGES FROM BETWEEN SIX WEEKS TO MORE THAN ONE YEAR. AT THE TWIN CITY ARMY AMMUNITION PLANT (TCAPP) SITE, OVER 60,000 LB. OF TETRACHLOROETHENE HAVE ALREADY BEEN RECOVERED BY VACUUM EXTRACTION AFTER ONLY ONE YEAR OF OPERATION, AND THE OPERATION WILL BE CONTINUED FOR SOME TIME (TCAAP OPERATIONS MANGER 1986). UNDER CONTINUOUS OPERATION, ALLOWING FOR START-UP, WEATHER, AND WATER TABLE CONDITIONS, THE RESPONSIBLE

PARTIES HAVE ESTIMATED FROM THEIR DATA THAT IT WOULD TAKE TWO YEARS OF OPERATION FOR ACCEPTABLE REMEDIATION OF THE TYSON'S FORMER LAGOON AREA SOILS.

#RA
RECOMMENDED ALTERNATIVE

SECTION 121 OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) AND THE CURRENT VERSION OF THE NATIONAL CONTINGENCY PLAN (NCP) (50 FED. REG. 47912, NOVEMBER 20, 1985) ESTABLISHED A VARIETY OF REQUIREMENTS RELATING TO THE LEVEL OF CLEANUP FOR REMEDIAL ACTIONS UNDER CERCLA. APPLYING THE CURRENT EVALUATION CRITERIA (EFFECTIVENESS, IMPLEMENTABILITY, AND COST) THAT WAS PREVIOUSLY DESCRIBED FOR EACH OF THE ALTERNATIVES, EPA IS RECOMMENDING THAT ALTERNATIVE 6 BE IMPLEMENTED AT THE TYSON'S DUMP SITE. THIS INNOVATIVE TECHNOLOGY REMEDIAL ACTION ALTERNATIVE MEETS THE GOALS OF SARA: PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT; ATTAINMENT OF POSSIBLE ARARS THROUGH TREATMENT AND CONTAMINANT RECOVERY IN BOTH THE LAGOON AREA SOILS AND IN THE UNSATURATED BEDROCK UNDERLYING THE FORMER LAGOON AREA; ACHIEVEMENT OF PERMANENT REDUCTION IN WASTE VOLUME AND TOXICITY ON-SITE; AND CONTROL OF POTENTIAL MIGRATION OF CONTAMINANTS BY USE OF LEACHATE (SEEP/SPRING) COLLECTION AND TREATMENT SYSTEM. A DISADVANTAGE OF THIS ALTERNATIVE IS THAT TRACE LEVELS OF METALS AND NONVOLATILE ORGANIC COMPOUNDS, WHICH HAVE BEEN SHOWN NOT TO PRESENT A RISK TO HUMAN HEALTH AND THE ENVIRONMENT, MAY REMAIN ON-SITE. THIS ALTERNATIVE IS NOT THE LEAST EXPENSIVE OF ALL THE FEASIBLE ALTERNATIVES CONSIDERED, BUT IS ONE OF THE MOST COST-EFFECTIVE OF THE ALTERNATIVES THAT ARE PROTECTIVE OF HUMAN HEALTH. TABLE 1 SUMMARIZES THE ASSOCIATED COSTS FOR EACH ALTERNATIVE.

ALTERNATIVE 5 (EXCAVATION AND OFF-SITE DISPOSAL OF CONTAMINATED SOILS) IS DESIGNED TO PROVIDE A PERMANENT SOLUTION TO THE RISKS ASSOCIATED WITH THE SITE. THIS ALTERNATIVE ALSO PROVIDES EASE OF IMPLEMENTATION AND HAS A PROVEN PERFORMANCE IN REMOVING CONTAMINATED SOIL VOLUMES. SOME OF THE DISADVANTAGES OF ALTERNATIVE 5 INCLUDE; GREATER POTENTIAL RELEASE OF VOLATILE ORGANIC VAPORS TO THE COMMUNITY; INABILITY TO REMOVE CONTAMINANT LEVELS IN THE BEDROCK UNDERLYING THE LAGOON SOILS; THE INTENT OF SARA WHICH DISCOURAGES EXCAVATION AND TRANSFERENCE OF CONTAMINATION FROM ONE SOURCE TO ANOTHER; AND THE HIGH COST OF DISPOSAL.

ALTERNATIVE 1 WAS NOT SELECTED BECAUSE IT WOULD NOT BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. ALTERNATIVES 2 AND 3 WERE NOT SELECTED BECAUSE THEY ARE TECHNICALLY INFEASIBLE AND ALSO ARE NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

EPA'S RECOMMENDED INNOVATIVE REMEDIAL ACTION ALTERNATIVE IMPLEMENTATION. THE FOLLOWING IS AN EXPLANATION OF EPA'S RECOMMENDED ALTERNATIVE THAT MAY BE IMPLEMENTED BY THE RESPONSIBLE PARTIES (RPS), UNDER THE SUPERVISION OF EPA, UTILIZING THE PROPOSED INNOVATIVE TECHNOLOGY REMEDIAL ACTION ALTERNATIVE NUMBER 6. ADDITIONALLY, RPS MAY ALSO IMPLEMENT GROUND WATER CORRECTIVE MEASURES.

#SRMS
SUMMARY OF REMEDIAL MEASURES AND SETTLEMENT FOR THE TYSON'S SITE

1. RESPONSIBLE PARTIES (RPS) ARE TO CLEANUP LAGOON SOILS TO A 50 PART PER BILLION LEVEL FOR FOUR INDICATOR ORGANIC COMPOUNDS AND ALSO TO CLEAN LAGOON SOILS OF OTHER ORGANICS TO LEVELS DETERMINED BY THE AGENCY TO BE PROTECTIVE OF HUMAN HEALTH AND ENVIRONMENT. THE LAGOON CLEANUP LEVELS FOR THE LAGOON SOILS ARE LISTED IN TABLE 2. THESE LEVELS HAVE BEEN DETERMINED IN ACCORDANCE WITH THE METHODOLOGIES AS SET FORTH IN APPENDIX A.

2. AT THE END OF THE TWELVE MONTHS OF VACUUM EXTRACTION THE RPS WILL DETERMINE THE EFFECTIVENESS OF THE CLEANUP AND BY THE END OF A TWENTY-SIX MONTH PERIOD ATTAIN THE CLEANUP LEVELS SPECIFIED BY EPA. IF TARGET LEVELS ARE NOT ATTAINED BY THE RPS WITHIN THE FIRST YEAR, THE RPS WILL ADDRESS SUPPLEMENTAL MEASURES TO IMPROVE THE VACUUM EXTRACTION PROCESS. AT THE END OF A PERIOD NOT TO EXCEED TWO YEARS AND TWO MONTHS FROM START OF VACUUM EXTRACTION, RPS MUST VERIFY ATTAINMENT OF SPECIFIED PROCESS LEVELS OR EPA MAY REQUIRE RPS TO REMOVE SOILS FOR OFFSITE TREATMENT OR DISPOSAL, OR TO IMPLEMENT ANY OTHER RESPONSE ACTION.

3. RPS TO IMPLEMENT GROUND WATER REMEDIATION AT RIVER LOCATIONS PROPOSED IN THE RPS' COMPREHENSIVE FEASIBILITY STUDY AND TO ESTABLISH COMPLIANCE POINTS AT THE RIVER LOCATIONS AS WELL AS TO ESTABLISH COMPLIANCE POINTS AT THE LAGOON BOUNDARIES, FOR THE ATTAINMENT OF CLEANUP STANDARDS FOR SITE RELATED COMPOUNDS. THE FINAL REMEDY SELECTED FOR SUCH GROUND WATER REMEDIATION WILL IMPLEMENT ALL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS IN CONSULTATION WITH THE COMMONWEALTH OF PENNSYLVANIA AND SUCH STANDARDS WILL BE INCLUDED IN A ROD DEVELOPED SUBSEQUENT TO THE COMPLETION OF THE OFF-SITE OPERABLE UNITS REMEDIAL INVESTIGATION/FEASIBILITY STUDY.

4. RPS ARE TO DEVELOP DESIGN WORK PLAN SUBJECT TO EPA APPROVAL PRIOR TO START OF ANY SITE WORK.

5. RPS ARE TO TAKE OVER FULL OPERATION AND MAINTENANCE OF LEACHATE COLLECTION SYSTEM AND STRIPPER AND UPGRADE AIR STRIPPER TO DEAL WITH EXPECTED LEACHATE (SEEP/SPRING) AND GROUND WATER FLOW.

6. RPS ARE TO REMEDIATE CONTAMINANTS IN THE TRIBUTARY FROM THE EXISTING STRIPPER EFFLUENT AREAS TO THE SCHUYLKILL RIVER.

7. RPS ARE TO DEVELOP LONG-TERM O&M WORK PLAN AND IMPLEMENT THIS PLAN FOR LAGOON AREA SUBJECT TO EPA APPROVAL.

8. RPS ARE TO REIMBURSE EPA $2.3 MILLION AND STATE $141 THOUSAND WHICH ARE PAST COSTS FOR RESPONSE ACTIONS AT THE TYSON'S SITE.

#RES

ADDENDUM TO TYSON'S RESPONSIVENESS SUMMARY
MARCH, 1988

IN JANUARY, 1985 EPA ANNOUNCED EXCAVATION AS THE SELECTED CLEANUP ALTERNATIVE FOR THE TYSON'S SITE. THE SUPERFUND STATUTE EXPIRED IN SEPTEMBER, 1985 AND WAS REAUTHORIZED IN OCTOBER, 1986. IN NOVEMBER, 1986 CIBA-GEIGY CORPORATION OF ARDSLEY, NEW YORK, A RESPONSIBLE PARTY AT THE SITE, REQUESTED THAT EPA REVIEW A NEW TECHNOLOGY KNOWN AS VACUUM SOIL EXTRACTION AS THE SITE CLEANUP ALTERNATIVE. FOLLOWING SEVERAL MEETINGS WITH EPA, DER AND THE UPPER MERION TOWNSHIP LOCAL OFFICIALS, CIBA-GEIGY CONDUCTED A PILOT PROGRAM AT THE TYSON'S SITE IN SPRING, 1987. THEY ALSO INVITED THE LOCAL MEDIA AND THE LOCAL OFFICIALS TO TOUR THE SITE AND OBSERVE THE PROJECT. EPA MET REPEATEDLY WITH THE TOWNSHIP OFFICIALS, EXPLAINING EACH NEW DEVELOPMENT AS IT OCCURRED. IN SEPTEMBER 1987 AFTER CLOSE REVIEW OF THE TECHNOLOGY EPA DECIDED TO RECOMMEND A ROD CHANGE, TO INCLUDE VACUUM EXTRACTION.

A DECISION ON THE RECOMMENDATION WAS MADE AFTER THE UPPER MERION TOWNSHIP SUPERVISORS VOTED 3-2 IN FAVOR OF THE NEW PROPOSED METHOD. BECAUSE OF THE ROD CHANGE, SEVERAL REQUIREMENTS HAD TO BE MET BEFORE THE AGENCY COULD OFFICIALLY ORDER CIBA-GEIGY TO BEGIN THE WORK. ON JANUARY 8, 1988, EPA ANNOUNCED THAT A PUBLIC MEETING WOULD BE HELD ON JANUARY 26 TO DISCUSS THE NEW PROPOSED ALTERNATIVE, AND THAT A 30 DAY COMMENT PERIOD WAS IN EFFECT UNTIL FEBRUARY 10. A QUARTER PAGE ADD WAS PUBLISHED IN THE NORRISTOWN TIMES HERALD LISTING ALL THE CLEANUP ALTERNATIVES, ALONG WITH EPA'S RECOMMENDATION FOR VACUUM SOIL EXTRACTION. DUE TO FREEZING ROAD CONDITIONS, THE PUBLIC MEETING HAD TO BE RESCHEDULED FOR WEDNESDAY, FEBRUARY 3. IN ADDITION, THE PUBLIC COMMENT PERIOD WAS EXTENDED TO FEBRUARY 19. EPA MET IN THE AFTERNOON OF FEBRUARY 3, 1988 WITH REPRESENTATIVES FROM CIBA-GEIGY, TERRA-VAC, AND ERM. A PREMEETING WITH EPA, DER AND TOWNSHIP OFFICIALS WAS ALSO HELD JUST PRIOR TO THE PUBLIC MEETING. A COURT REPORTER WAS PRESENT AT THE PUBLIC MEETING TO DOCUMENT ALL COMMENTS RECEIVED AS PART OF THE OFFICIAL RECORD FOR THE SITE. A TRANSCRIPT OF THE MEETING IS AVAILABLE AT THE SITE REPOSITORY, AT THE WOLFSOHN MEMORIAL LIBRARY, TOWN CENTER ROAD, KING OF PRUSSIA, PA.

THE PUBLIC MEETING WAS OPENED BY NANCI SINCLAIR, WITH A DESCRIPTION OF THE ROD CHANGE AND THE REQUIREMENTS UNDER THE NEW SUPERFUND BILL, AS AMENDED BY SUPERFUND AMENDMENT AND REAUTHORIZATION ACT (SARA) OF 1986. TIM TRAVERS DID A SITE TECHNICAL PRESENTATION, AND JIM MALOT OF TERRA-VAC DID A SLIDE PRESENTATION ABOUT THE VACUUM SOIL EXTRACTION PROCESS. INCLUDED IN THE PRESENTATION, WERE SLIDES OF THE ON-SITE PILOT PROGRAM. AFTER THE PRESENTATIONS WERE COMPLETE, THE MEETING WAS OPENED TO QUESTIONS AND ANSWERS. EPA TOXICOLOGIST DR. RICHARD BRUNKER ATTENDED THE MEETING TO ANSWER HEALTH QUESTIONS. THE FOLLOWING IS A SUMMARY OF THAT PORTION OF THE MEETING;

MOST RESIDENTS WERE INTERESTED IN WHAT AREAS OF THE SOIL WOULD BE CLEANED UP IF VACUUM EXTRACTION IS USED. EPA BASED ITS' ANSWER ON THE EVALUATION OF THE RESULTS OF THE PILOT TEST, SUBMITTED BY CIBA-GEIGY IN JUNE, 1987. THE RESIDENTS WERE TOLD THAT THE SOIL ZONE AND THE BEDROCK ZONE WOULD BE CLEANED UP, AND THAT A 20 TO 40 FOOT RADIUS AROUND THE WELL WOULD BE CLEANED BY USING VACUUM EXTRACTION TO REMOVE THE CONTAMINATION FROM THE SOIL.

A RESIDENT STATED THAT HE BELIEVED VACUUM EXTRACTION IS A MUCH LESS EFFECTIVE ALTERNATIVE THAN EXCAVATION, AND THAT THE DISCUSSIONS HAVE LASTED TOO LONG, WITH NOTHING ACTUALLY BEING CLEANED UP FOR THE PAST FOUR YEARS. EPA EXPLAINED THAT THIS NEW ALTERNATIVE WAS NOT AVAILABLE WHEN THE FEASIBILITY STUDY WAS CONDUCTED, AND THERE ARE REQUIREMENTS FOR PUBLIC PARTICIPATION THAT MUST BE MET BEFORE A NEW RECORD OF DECISION IS SIGNED. IN ADDITION, EPA EXPLAINED THAT THROUGH FURTHER INVESTIGATION IT WAS DISCOVERED THAT MOST OF THE CONTAMINATION FROM THE LAGOON AREAS HAD MIGRATED INTO THE BEDROCK AND EXCAVATION WOULD NOT REMOVE ALL THE RESIDENCE CONTAMINANTS FROM THE AREA UNDERLYING THE SITE. SEVERAL RESIDENTS ASKED IF EXCAVATION FOLLOWED BY VACUUM EXTRACTION WOULD BE A BETTER WAY OF REMEDIATING THE SITE. EPA ANSWERED THAT VACUUM EXTRACTION WOULD BE A SAFER METHOD NOT ONLY FOR THE SURROUNDING COMMUNITY, BUT ALSO FOR THE WORKERS ON SITE. WE ALSO EXPLAINED THAT UNDER THE NEW SUPERFUND LAW, EPA IS LOOKING INTO ON-SITE TECHNOLOGIES RATHER THAN TAKING

ENVIRONMENTAL CONTAMINATION FROM ONE SITE TO ANOTHER. DR. BRUNKER EXPLAINED THE SCENARIOS THAT WERE TAKEN INTO ACCOUNT BEFORE EPA RECOMMENDED THE NEW ALTERNATIVE. HE EXPLAINED THAT EPA PERFORMED A QUANTITATIVE RISK ASSESSMENT WHICH LOOKS INTO HOW MUCH SOIL CHILDREN WOULD BE EXPOSED TO WHILE PLAYING OUTSIDE, AND HOW MUCH EXPOSURE THERE WOULD BE TO ON-SITE WORKERS. HE ALSO TOLD THE RESIDENTS THAT THE SITE WOULD BE CLEANED TO LEVELS THAT ARE NOT HARMFUL. ANOTHER RESIDENT ASKED THAT HIS STATEMENT BECOME PART OF THE OFFICIAL RECORD. HE STATED THAT A TOTAL CLEAN UP SOLUTION IS HIS PREFERENCE.

ONE RESIDENT ASKED WHAT HAPPENS TO THE SITE AFTER IT IS CLEANED UP. EPA REPLIED THAT THE SUPERFUND LAW DOES NOT ADDRESS SITE OWNERSHIP, AND THAT OWNERSHIP OF THE PROPERTY WOULD REMAIN WITH GENERAL DEVICES. A RESIDENT STATED THAT THE TOWNSHIP WANTS TO BUILD A HIGHWAY WHICH WOULD RUN THROUGH PART OF THE SITE, AND SHE WANTED TO KNOW IF THERE WOULD BE A THREAT TO WORKERS WHO WOULD HAVE TO EXCAVATE THE AREA IN THE FUTURE. EPA INFORMED THE RESIDENT THAT WORKER EXPOSURE WAS ALSO CALCULATED DURING THE QUANTITATIVE RISK ASSESSMENT. WE CALCULATED THAT THE LEVELS WE WOULD CLEAN TO WOULD PROTECT THE AQUIFER AND THAT THOSE LEVELS WERE EXTREMELY CONSERVATIVE. DR. BRUNKER EXPLAINED THAT IF WE CLEANED DOWN TO LEVELS TO SATISFY THE AQUIFER PROTECTION CRITERIA IN THE SOIL, IT WOULD SATISFY THE PROTECTION OF CHILDREN WHO PLAY IN THE AREA AND THE PROTECTION OF WORKERS WHO WORK THERE 8 HOURS A DAY.

A TRANSCRIPT OF THE PUBLIC MEETING IS AVAILABLE AT THE SITE REPOSITORY WHICH IS THE WOLFSOHN MEMORIAL LIBRARY ON TOWN CENTER ROAD. SEVERAL RESIDENTS ASKED WHERE ALL OF THE DOCUMENTS AND MODELS CAN BE REVIEWED. DURING THE COMMENT PERIOD WHICH LASTED FROM JANUARY 8 TO FEBRUARY 19, ONLY TWO WRITTEN COMMENTS WERE RECEIVED. ONE RESIDENT FULLY SUPPORTED THE VACUUM EXTRACTION PROCESS. THE OTHER LETTER WAS A GENERAL COMMENT, REQUESTING THAT EPA EXPEDITE THE TYSON'S CLEANUP PROJECT.

#TAB

TABLE 2

CLEANUP LEVELS FOR LAGOON SOILS

COMPOUND	CONCENTRATION IN MG/KG
ANILINE	1.40 E +00
ANTHRACENE	1.24 E +04
BENZENE	0.05 E +00
BENZOIC ACID	6.95 E +04
BIS (2-ETHYLHEXYL)PTHALATE	8.31 E +04
2-BUTANONE	3.68 E +01
CHLOROBENZENE	1.15 E +01
2-CHLORONAPHTHALENE	1.70 E +02
2-CHLOROPHENOL	3.80 E +00
CHRYSENE	6.00 E -02
CYCLOHEPTATRIENE	2.10 E -01
CYCLOHEXANONE	2.62 E +02
DI-N-BUTYLPHTHALATE	8.94 E +02
DI-OCTYL PHTHALATE	1.64 E +04
DICHLOROBENZENES	6.00 E +01
2,4-DIMETHYLPHENOL	1.08 E +01
N,N-DIMETHYL-1,3-PROPANEDIAMINE	6.50 E +00
DODECANE	4.90 E +05
ETHYLBENZENE	5.99 E +02
1-ETHYL-2-METHYLBENZENE	1.07 E +02
FLUORANTHENE	4.08 E +02
HEXADECANE	2.90 E +06
HEXADECANOIC ACID	1.97 E -01
METHYLENE CHLORIDE	5.84 E +00
2-METHYLNAPTHALENE	4.78 E +02
2-METYYL PHENOL/4-METHYL PHENOL	3.35 E +01
2-METHYL-2-PENTANONE	1.87 E +01
N-NITROSODIPHENYLAMINE	4.80 E +00
NAPHTHALENE	3.03 E +02
NITROBENZENE	3.00 E -01
1,1-OXYBIS-(2-ETHOXYETHANE)	9.22 E +00
PHENANTHRENE	7.09 E +02
PHENOL	4.19 E +01
PYRENE	3.89 E +03
TETRACHLOROETHENE	0.05 E +00
TETRAMETHYLUREA	7.50 E +00
TOLUENE	5.88 E +02
1,2,4-TRICHLOROBENZENE	4.79 E +02
1,3,5-TRICHLOROBENZENE	4.79 E +02
TRICHLOROETHENE	0.05 E +00
1,2,3-TRICHLOROPROPANE	0.05 E +00
1,2,4-TRIMETHYLBENZENE	1.23 E +03
TRIDECANE	5.40 E +04
UNDECANE	2.30 E +04
O-XYLENE	6.28 E +01